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Milk Records and Tests

- I. MILK RECORD AT THE EXPERIMENT FARM.
 - II. VARIATIONS OF MILK-YIELD CAUSED BY VARIATIONS IN MILKING.
 - III. A TEST SHOWING THAT COWS ARE AFFECTED BY CHANGES IN STABLE ROUTINE.
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ISSUED BY THE
NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION
RALEIGH, N. C.

BULLETIN No. 116.



JUNE 24, 1895

372

N. C. COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

THE NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION

INCLUDING

THE FERTILIZER CONTROL STATION

AND THE STATE WEATHER SERVICE,

UNDER THE CONTROL OF THE

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MILK RECORDS AND TESTS.

- I. MILK RECORDS AT THE EXPERIMENT FARM.
- II. VARIATIONS OF MILK-YIELD CAUSED BY VARIATIONS IN MILKING.
- III. A TEST SHOWING THAT COWS ARE AFFECTED BY CHANGES IN STABLE ROUTINE.

By F. E. EMERY, AGRICULTURIST.

I. MILK RECORDS AT THE EXPERIMENT FARM.

When this record began in 1891, the Experiment Station had four cows in its stable, one a registered Jersey, one unregistered, and one grade, the fourth belonged to the A. and M. College. The registered cow was stripping and the unregistered one had been milking about three months, having come in milk prematurely by an injury which resulted in permanent lameness. It was doubtless a broken femur or thigh bone.

The beginning of lactation for the grade cow was the signal for beginning to weigh the milk. Weighing was at first done on the Fairbank's scales used to weigh food for the cows. Record papers, to last one week, were ruled leaving a column for each cow whose milk was to be weighed. In each column, spaces were left for recording the weights of the morning and night's milk for each day of the week.

Later, a Chatillon spring balance was purchased on which to weigh the milk and also the grain food for the cows, and for greater convenience weekly blanks were ruled with printed headings. These require much less work to keep the record. Last of all we adopted the Chatillon Spring Balance* graduated to tenths and twentieths or five-hundredths pounds instead of ounces. This greatly facilitates the work of addition and subtraction, and is much simpler than using ounces, besides freeing the record from liabilities to mistake in using the fractional numbers.

There are two pointers on this scale, one is movable to be set to take out pail-tare without subtracting. In order to take advantage of this convenience, make all milk pails weigh alike by addition of solder to their bottoms.

The weekly records are copied into a book made specially to hold a year's record of one cow on one page. It has one column for each month with dates in the margin and the weights of morning and evening milk for each day are added and entered as the yield per day for each cow. The right hand page is



Chatillon
Spring
Balance.

*Sold by Borden & Selleck, Chicago, Ill. Price \$4.

left for notes or observations on the cow or records of feed and other important items.

This record has been kept for a little more than four years. As to the number of cows in milk at any one time quite a large number have been tried and not accepted, or purchased and milked until fat, then turned off for beef where they proved to be unfit to keep for milk and butter.

No high prices have been paid for cows, and our object has been to buy such as any private dairyman might select, to test them as he should do, and to dispose of them in such a way as to gain some profit on each animal. This can be done by feeding sufficiently to fatten the poorest milkers when the beef value together with milk obtained will cause all but the poorest to yield a small net return. Several examples are given below.

Cows are often held by dealers at fictitious prices. They are usually priced upon the individual appearance and by the amount of milk in gallons that has been, or that the dealer may claim each individual capable of giving. Their real worth to any dairyman is of course based on what yields he can secure with his methods of feeding and handling. Appearances are often deceitful and good judges of the "looks" and "marks" of a good cow, as fine horns, yellow ears, loose hide, open chine, large cord-like muscle front of stifle, or knee joint, large udder and milk veins or fine escutcheon with long or short tail, wedge shaped, may fail to point out the profitable cow. The crucial test is daily application of scales and test of milk for fat.

In commencing this record there were four cows at the Station barn. In adding to that number, our aim has been to select as good ones as we could secure and for which the price would not over balance the value of the animal. The plan adopted was to secure a herd a little above the average, yet no better than any dairyman of small means can obtain. So many have been examined and discarded, or kept a few days on trial and removed, that it seems certain that cows offered generally for sale rank far below those for which records are given below.

MILK RECORD FOR 1891.

Below will be found the milk record for each cow with name and breed, during the year 1891.

NAME OF COW.	BREED.	Milk Yield within the year 1891.	Milk Yield for one year from calving.
		LBS.	LBS.
Trixy Green	Grade Jersey	3429.	3436. <i>a</i>
Dora McKee	Jersey	2535. <i>b</i>	
Lapham or College cow	Native	2388. <i>c</i>	
Old White	Mountain Native	3605. <i>d</i>	
Daisy	Grade Jersey	4434. <i>3e</i>	
Repsey	Grade Jersey	3091.45 <i>f</i>	1165.8 <i>g</i>
Devon	Devon	1165.8 <i>g</i>	

Notes on the Record for 1891.—a Record for eleven months during one period of lactation.

b Came in milk prematurely in August, 1890, and with broken femur. No record was made of first three months.

c Five months and twenty-three days record.

d Nine months and twenty-three days.

e Seven months and thirteen days.

f Six days less than eight months.

g Three months and twenty-two days.

MILK RECORD FOR 1892.

In the table below is found the name and breed of cow with her milk record during 1892.

NAME OF COW.	BREED.	Weight of cow near close of year.	Milk yield within the year 1892.	Milk yield for one year from calving.
		LBS.		LBS.
Trixy Green	Grade Jersey	922.	1899. ¹	3014.
Dora McKee	Jersey	837	4141. ²	4467.6 ³
Devon	Devon	872.	582.7 ⁴	
Nellie	Grade Jersey .....	.....	1157.8 ⁵	
Jersey Guernsey	Cross-bred	989.	2691.8 ⁶	
No. 1	Grade cow .....	.....	418. ⁷	
No. 2	Grade Jersey	830.	3063.6 ⁸	3274.7 ⁹
No. 3	Grade Jersey	1016	2707.8 ¹⁰	
No. 4	Native .....	.....	5. ¹¹	
No. 7	Native	875	2786.7 ¹²	
No. 5	Native	944	2393. ¹³	
No. 6	Native .....	.....	2629.81 ¹⁴	
No. 8 .....	.....	.....	76.25 ¹⁵	
No. 9 .....	.....	.....	9.7 ¹⁶	
No. 10	Mountain cow	752	484.98 ¹⁷	
Miss Jones	Native	622	1263. ¹⁸	
Jones 2d	Native	826	279.1 ¹⁹	
Shep	Native	751	1626. ²⁰	
Charcoal	Native .....	.....	1203.4 ²¹	
Miss Haley	Native	635.	1403.4 ²²	
Spot	Grade Jersey	698.	1407.7 ²³	

Notes on the Record for 1892.—1. Dry 61 days last of year; seemed to have some nervous affection in January, which cut down the yield of milk and nearly dried off in May, but cow kept in good order after it. 2. Dry 55 days; lactation began in February, and record 10 months. 3. For year from calving, the record includes January and February of 1893. 4. Yield for 2 months and 4 days. 5. Yield for 4 months and 21 days. 6. Milked 8 months and 22 days; this cow is nervous and excitable; she is a bad kicker, but her milk is rich; she early became master of the yard, and was dehorned on June 30th; milked 9 months, less 7 days. 7. Milked but 23 days. 8. Grade Jersey was poor and weak; was a fit subject for a veterina-

rian when she came to us, at the beginning of her lactation, in February. 9. Milked for a full year, less 6 days. 10. Grade Jersey milking from only two teats, and milked 9 months and 20 days. 11. Milked only twice. 12. Hornless brindled native or grade; milked but 6 months and 19 days. 13. Hornless native; milked 7½ months. 14. Native; milked 5 months and 8 days, and sold. 15. Milked 8 days only. 16. Milked 5 days. 17. Milked 25 days. 18. Milked 3 months and 20 days last of 1892. 19. Milked 66 days when fresh. 20. Milked 8 months and 18 days. 21. Milked 3 months and 21 days. 22. Milked 3 months and 9 days. 23. Milked 2 months and 28 days.

MILK RECORD FOR 1893.

Below is given the name, breed of cow, and weight, with the total yield of milk during the year 1893:

NAME OF COW.	BREED OF COW.	Weight of	Milk yield	Estimated
		cow.	within the	yields of
		Pounds.	year 1893.	butter with-
			Pounds.	in the year
				1893.
				Pounds.
Dora McKee	Jersey	846.	2751.	212.86
No. 2	Grade Jersey	837.	3008.	176.90
No. 3	Grade Jersey	1062.	1004.	61.26
No. 5	Native?	832.	6607.	297.75
No. 7	Native	882.	3944.	220.43
Jersey Guernsey	Cross-bred	853.	5213.	290.49
Spot	Grade Jersey	809.	4337.	263.4
Miss Haley	Native	752.	3152.	188.38
Miss Jones	Native	683.	4118.	167.7
Devon	Registered	940.	493.	30.0
Hubbard	Native	795.	461.6	26.8
No. 14	Jersey	859.	3345.6	194.75
No. 15	Grade Jersey	756.	1198.7	66.7
Daisy	Mountain cow	893.	1121.	59.81

Notes on the Milk Record for 1893.—In addition to the weight of cow and yield of milk in pounds, a test has been made and the amount of butter fat calculated for each month. This has been calculated as butter of 85 per cent. pure fat, and 15 per cent. water, salt and impurities. If the butter contains a little higher than 15 per cent. water, etc., it will be partially balanced by losses in skim and butter milk and manipulation.

The average weight of cows, were compiled for this record from the monthly weighings for the full year.

DORA MCKEE.—Lactation began last of February, 1892, and again in April, 1893, without having dried off in the meantime. Previous to calving this cow was dry 55 days. During the year 1892 she yielded 4141 pounds of milk. In 1893, not having had any resting period, she gave but 2751 pounds. Milkers were changed twice and cows had less pasturage in 1893 than in 1892. This may be cited

perhaps as a case showing it is not profitable to encourage the continuous milking habit. This record shows with preceding ones what we have previously observed, that cows have off years and should be judged carefully lest a good one be discarded when tested during a period of depression.

No. 2.—Began lactation out in the woods during cold weather in 1892, and came to us weak and emaciated. She gave 3063 pounds milk in 10 months and 5 days. In 1893, she was sick with milk fever five days after calving. Was back in the stable after five more days, but gave only 3008. pounds of milk in 10 months and 2 days, but $1\frac{1}{2}$ months was on the last part of lactation for previous year. Was dry nearly two months. Became master of the herd and was dehorned Dec. 12th to reduce her fierceness. The butter yield from this cow has been disappointing.

No. 3—Large grade Jersey. Milk all from rear teats. Yield too small to support cow and she was sold for beef two months after beginning of lactation. Yield is for 53 days last end, and 56 days of next period of lactation, with 43 days dry between.

No. 7—Brindled, polled, dry nearly half month in April.

No. 5—Red, polled, largest yield of milk, but per cent. of fat rather low. Dry about 25 days first part of year.

GUERNSEY-JERSEY—Dry $4\frac{1}{2}$ months, 77 days of which came into 1894. Milked 10 months, 12 days.

SPOT—Grade Jersey. Milked three months with first calf before this year began. Dry October, December, 60 days, and year completed with fresh lactation.

MISS HALEY—Native. Raised because her dam was a good cow, and sold because her fence-breaking mischievousness could not be tolerated. Purchased to mate Spot above, and came in milk about two weeks earlier, and failed to breed with several trials, so has milked continuously all the year. These two heifers are in contrast for dairy use. See article elsewhere. Miss Haley was a fierce master of heifer yard, and was dehorned with Jersey-Guernsey June 30, 1892, $2\frac{1}{2}$ months before lactation began.

MISS JONES—Small black cow. Was milking when purchased, and gave a very uniform amount for over a year. Was giving as much when an injury to her side caused her to be sent to the butcher. Milked 8 months and 18 days in 1894.

DEVON—This registered cow came to State Fair fresh in milk and was sold for a milch cow, but not proving satisfactory, was sold here to prepare for beef. Was milked 60 days for record.

No. 14—This cow was taken on trial June 20th with calf by her side and purchased. Calf returned to seller. She was "hipped," which accident was probably due to fierceness of No. 2. Record for 6 months $10\frac{1}{2}$ days.

No. 15—Cow on trial at first, then kept for milk until owner could dispose of her. Milked 3 months and 22 days.

DAISY—Mountain cow, probably a shorthorn. Fed and milked

here by owner because cow is not contented alone. Record for 56½ days. Excrement given for stabling.

Feeding the Cows.—It is very important to consider the feeding when the milk record of a cow or herd is being examined. In case of the above record, every animal was fed all it would eat every day. The food was alike for all during the entire time, except when yielding a large amount of milk the grain-ration was given more freely. All being thus fed, the yields are fairly comparable and show, as well as such average yields can, the differences in value of the cows, making some allowances for not being in most vigorous condition at times. The feeds used have been corn silage, four months; bagasse silage, half a month; hay and cotton-seed hulls, and green rye, oats and Canada pease, cow pease, and green corn or clover. The grain-ration has been mainly a mixture of wheat bran and cotton-seed meal, mixed in the proportion of two of the former to one of the latter.

Dry cows have been fed bran alone, or when fattening upon cotton-seed meal alone. In whatever proportions feeding has been done, every animal is given as much as it seems able to eat, and reductions are made when they begin to leave much waste.

Water.—Cows have had an abundant supply of pure water from a tank in which rainfall on the barn has been collected. They have been offered water twice daily when confined and at other times left in yard for several hours each day with access to water from tank. Water has been offered three times daily during hot weather, and when on dry pasture, as during 1893, when the pasture lot was not supplied with water.

MILK RECORD FOR 1894.

In presenting this summary, it should be stated that of the cows reported in the record for 1893, from the effects of abortion, two have died and one other rendered worthless for comparisons. Besides these cows, there have been milked at the Experiment Farm during the year three others, for periods ranging from three to four months.

Abortion in the herd has greatly interfered with a regular flow of milk. Cows which have been affected by this disease in 1894 are, No. 2, Spot, Daisy E, Trixy's Rioter, and the three that are dropped from record, Guernsey-Jersey, No. 14, and Miss Haley.

Epizootic abortion is a disease of the envelopes immediately surrounding the foetus and within the womb of the cow. Sometimes it is found in the calf itself, but never attacking the cow. It has been investigated in France by Dr. Nocard. He proved the bacterial character of the disease and suggested the treatment that bears his name. The treatment has been more recently simplified by omitting injections. There should be thorough cleaning up and disinfection of all parts of the stable and yards. This is accomplished by cleaning out every nook and corner, digging up the earth floors of sheds, stalls, etc., to the depth of three inches and refilling with fresh clay, after a thorough sprinkling with copper sulphate (blue stone)

MILK RECORD FOR 1894.

	No. 2.	No. 5.	No. 7.	Spot.	Dora McKee.	Trixy's Rioter.	No. 18.	No. 19.	Polly B. Daisy E.	Fannie of Sedge- field.
Least weight for year { Month ----- Weight in lbs. -----	Aug. 821.	Feb. 837.	Aug. 967.	March. 761.	Aug. 747.	April. 565.	March. 724.	March. 739.	Feb. 471.	Nov. 641.
Greatest weight { Month ----- Weight in lbs. -----	Dec. 973.	Nov. 984.	May. 1065.	July. 908.	April. 930.	Dec. 734.	Dec. 848.	Dec. 841.	Dec. 592.	Dec. 651.
Average weight for year in pounds.	884.	908.	1022.	844.	841.	639.	789.	789.	525.	645.
Record began -----	Jan. 1.	Jan. 1.	Jan. 1.	Jan. 1.	Jan. 1.	Jan. 15	March 6.	March 21.	Feb. 16.	Jan. 1.
Record closed -----	Dec. 31.	Dec. 31.	Dec. 31.	Dec. 31.	Dec. 31.	Dec. 31.	Dec. 31.	Dec. 31.	Dec. 31.	Oct. 27.
Yield of milk in 1894—pounds -----	3872.1	4506.3	3918.	6175.2	3315.5	2565.7	3949.5	3897.8	3338.2	Dec. 31. 1165.95
Number of days dry -----	00.	52.	115.	00.	24.	00.*	00.	00.	00.*	
Average per cent. of fat in milk -----	5.015	4.07	4.44	4.71	6.42	5.304	5.60	5.97	5.65	5.188
Total butter fat from monthly tests in pounds -----	197.24	205.95	180.74	297.45	212.76	143.907	230.63	228.014	181.76	
Calculated yield of butter at 85 per cent., in pounds -----	232.04	242.29	212.64	350.53	250.30	169.36	271.32	268.25	213.33	61.82
Calculated yield at 80 per cent. fat, in pounds -----	246.55	257.44	225.92	371.81	265.70	179.88	288.29	285.02	227.2	72.73
										77.27

*Not dry after coming into milk.

solution in the proportion of 40 grams per litre, or 6.4 ounces per gallon of water. This sprinkling is recommended to be done every ten days, and should extend to the rubbing places as well as floor. This was at first faithfully done, but was discontinued after warm weather was past.

The treatment consisted in daily sponging the cows about the tail, vulva, and adjoining parts with the following solution: Distilled soft rain water $4\frac{1}{2}$ gallons; glycerine and 36° alcohol, $3\frac{1}{4}$ ounces each; bichloride of mercury $2\frac{1}{2}$ drachms. This solution has been in use at this writing over 15 months, and it will be continued until it seems plain there are to be no more abortions. More than one year has passed since the last one occurred, and most of the cows are due to calve from August, 1895, to January, 1896.

Notes on the Record for 1894—Cow No. 2 came in milk April, 1893, and should have been fresh again in June, but was attacked by abortion March 4th, 1894, and continued yielding milk throughout the year.

Cow No. 5—Aborted October 22d, 1893, and continued milking until October, 1894. Dry 52 days and brought twin calves by Seneca, American Shorthorn Herd Book, No. 110,166, November 17, 1894.

Cow No. 7—Dried off Middle of February and came in fresh June 9th, having been dry nearly four months.

SPOT—After beginning lactation November 29th, 1893, milked steadily to September 24th, 1894, when cow came fresh in milk again by abortion and continued in milk throughout the year.

GUERNSEY—JERSEY—Milked until February 19th, when she dried off. Aborted and died in March bringing twin calves.

MISS HALEY—Sold for beef March 21, 1894.

Cow No. 14—Dried off March 21st. Died from shock of abortion. This was the cause, but the cow was weakened by presence of foreign matter in lungs which prevented proper circulation of air and aeration of blood.

DAISY E—Fresh in November, 1893, and aborted August, 1894, after having ceased milking six days.

TRIXY'S RIOTER—This heifer was bred at Experiment Farm. Her dam was Trixy Green, whose record has been published. We were told she was a descendant of a cow that wore the wreath at the May Fair for several years, but later have ascertained that she was an inbred Bismarck of Torrington cow, out of Nellie Bismarck by Prince, whose dam was a grade cow. According to this she carried 50 per cent. of blood of Bismarck of T., 25 per cent. of Muriel, and 25 per cent. of a grade Jersey cow. She was a neat looking, small cow, but of only small capacity. Bred to Thornbrook's Rioter 16592. Trixy Green produced Trixy's Rioter. This heifer began lactation January 9, 1894, at nearly $2\frac{1}{4}$ years of age, was afflicted by abortion in September, 1894, and has yielded 2565.7 pounds of milk, averaging 5.30 per cent. fat. Was not dry after coming in milk during the year.

POLLY B.—A full Jersey belonging to Mr. T. Henry Briggs, Raleigh, N. C. Mr. Briggs offered the use of this heifer through two milking periods to be returned to him at the beginning of the third period. Polly was received January 17th, 1894, and came into milk February 12th, 1894 at about two years and two weeks old. She is under average size for a two-year old, and will be given a long first period followed by a shorter second period in order to give her a better chance for growth.

No. 18.—Grade Jersey cow purchased with the next to replace *Guernsey Jersey* and *No. 14*. Cow came to the farm nearly fresh in milk, the young calf having been recently taken away from dam. This cow has given a low percentage of fat in milk when milked before feeding.

No. 19.—Cow came to Experiment Farm March 21st, when she had been milked with calf by side for about 10 weeks.

Fannie of Sedgfield.—Cross-bred Guernsey Jersey sired by registered Guernsey Squire of Salem, 1451; dam registered Jersey cow, Fred's Pet, 20932. Bred at Sedgfield Stock Farm, Winston, N. C. Purchased of Mr. Elliott Warren at close of the State Fair. Fannie came into milk immediately and gave a full two month's record before the year was out, having produced her first calf at 1 year 11 months and 2 days old.

Feeding has not varied very much from that of 1893 except in summer. The winter ration consisted mainly of a meal ration of one part by weight of cotton-seed meal to two parts of wheat bran and corn silage as freely as the cows would eat it. A calculated ration nearly always is taken as the basis and followed very closely except where a cow's appetite varies considerably. In the spring with soy-bean silage, corn meal became a part of the ration and several cows were fed on different rations to compare with a mixture sold here. In summer, less soiling and more pasturing was practiced than in 1893. Cows are pastured at night and shut in a darkened shed with as much air as it is possible to give them during hot weather. When pasture became short, soiling was resorted to until the silo was again opened. Soiling crops were corn, prickley comfrey, cow-pea, corn and cow-pea vines. Water has been supplied from the tank the same as last year, and there has been running spring water in the pasture.

II. VARIATIONS OF MILK-YIELD CAUSED BY VARIATIONS IN MILKING.

Wishing to show the importance of some of the so-called lesser details in the routine work of the stable, for the sake of illustration, and to prove the value of a regular order in doing all the stable work, one cow was milked several times in an unusual way and her milk tested for fat.

The cow is said to be a cross-bred Jersey-Guernsey. She is of an extremely nervous disposition, and in nearly two years in our stable does not allow herself to be handled without quite a show of nervous excitement. This cow was always hampered by a strong strap to prevent kicking at milking, until she was shorn of a beautiful pair of horns which she too vigorously used on her fellows. Then she calmed sufficiently to be milked without the use of a strap, if the milker proceeded in the usual way.

For the first trial on the morning of September 19, one teat was milked at a time, beginning at the right front, then right rear, and ending with the left front. The milk from each teat was weighed separately, sampled and tested for fat. At the evening milking, the cow was milked in the usual way, two teats at a time, right front with left rear first, and right rear with left front last. The milk from each teat was received in separate dishes and again weighed and tested. The following day the milking was done as usual and no tests made, but on the second day the testing was reversed. The morning milking was begun with left front and ended with the right front; at evening the left front and right rear teats were milked first and in separate pails, followed by the other two.

Following are the yields in pounds and the per cent. of fat from each teat for the days named:

SEPTEMBER 19, 1893.				SEPTEMBER 21, 1893.			
		YIELD LBS.	PER CENT. FAT.			YIELD LBS.	PER CENT. FAT.
<i>Morning Milk.</i>				<i>Morning Milk.</i>			
Milked	1st right front teat	2.05	4.80	Milked	1st left front teat	2.05	4.80
"	2d right rear	1.80	4.50	"	2d left rear	2.70	4.40
"	3d left rear	2.20	3.40	"	3d right rear	1.70	3.50
"	4th left front	1.55	2.60	"	4th right front	1.85	3.20
		7.60				8.30	
Total calculated			8.875	Calculated at			4.05
<i>Evening Milk (usual method)</i>				All mixed and tested after			
First	{ Right front	2.00	5.20	first samples, about 20 oz.			
	{ Left rear	2.80	5.80	taken			4.30
Last	{ Right rear	1.55	4.60	<i>Evening Milk.</i>			
	{ Left front	2.20	5.20	First	{ Left front	1.80	5.20
			nearly		{ Right rear	1.65	5.80
Calculated on		8.55	5.30	Last	{ Right front	2.00	5.40
					{ Left rear	2.25	4.60

Comparing the morning milkings each by itself, if no other causes

were taken into account, perhaps one might be justified in the conclusion that the milk from a given teat is richer than from another, but no explanation is offered for what *may* or *may not* be a fact under normal conditions. Comparing now the two morning milkings with each other, it is observed that the decrease in per cent. of fat was reversed when the order of milking was reversed. It is evident then that the difference is due to another cause than difference in the product of different teats. We have ascribed this difference mainly to interference with the regular order of milking and excitement of the nervous system of the cow. It was evident that the cow became more than usually excited on the morning of 19th inst., when the first change was made, and if this is the cause of the decrease of fat in the milk the second time the change was made, the effect was less than at the first change. A possible reason for a small part of the difference lies in the relative thoroughness with which the last milk from each teat was exhausted. A very little closer to complete dryness from any one teat than from another could slightly change the per cent. of fat from the whole quarter. As proof of this the following result is shown of two milkings previously made with the same cow.

On September 12th, 1893, she was milked as usual except that at the beginning of milking a little milk was drawn from all teats and this first milk tested; the milking then proceeded regularly until the stripping was reached and this part reserved until strippings were obtained and sampled when all of the three portions except the samples from first and last parts were mixed and sampled for a representative of the whole.

At the evening milking, the milk was drawn in three parts, ten streams being taken from each teat at first and as near as possible in the milkers judgment an equal amount for strippings was left for the last part. Following are the results.

<i>Morning Milk:</i>		
First of milking	1.75 pounds.	1.20 per cent. fat.
Last of milking .....	.60 "	8.40 " "
Total except samples of above	----	4.40 " "
The yield was 7.60 pounds.		
<i>Evening Milk:</i>		
First 10 streams from each teat	1.45 pounds.	1.00 per cent. fat.
Second part of milking	5.00 "	5.80 " "
Third part of strippings .....	.45 "	9.00 " "
6.90 calculated at 5.00 " "		

This cow is perhaps an extreme case but such changes must be no less real if they are not so marked with other cows. Hence, the extreme care and attention to details and quiet orderly habits necessary to have animals thrive and give profitable returns. This explanation is in harmony with the belief of dairymen generally, and shows why those who pay attention to these matters are more likely to be successful than those who are less careful of the small points, who do not secure all the returns from the feed and care bestowed which the animals are capable of producing.

III. A TEST SHOWING THAT COWS ARE AFFECTED BY CHANGES IN STABLE ROUTINE.

Instances of loss due to strange milkers are doubtless numerous, and it may not be needed to convince dairymen of the necessity of deviating from a regular routine with caution, if they would avoid unnecessary losses. On one occasion* the record of a cow which was giving $7\frac{3}{8}$ pounds (about .855 gallon of milk daily), showed a yield of but one pound. Inquiry showed that the established routine, which was to give the cows their feed and then to milk, had not been followed. The assistant had come in late, and in order to milk on time, had omitted to feed first. After stripping faithfully he could obtain only one pound of milk. The next milking was larger than usual, but the irregularity showed that a loss was the result. The yield was for five days, 7.25, 7.38, 6.25, 6.63, 7.30 pounds respectively. The one pound milking occurred in the middle day.

Another cow, if milked before being fed, usually became uneasy and might kick very hard. An examination of her milk showed a decrease of fat. Previously this cow's milk had tested 3.60 to 4.40 per cent. fat. On one occasion only 1.60 per cent. of fat was found in her milk when she was milked before being fed the meal ration. This is a serious loss, and one which can be repeated with this cow** at any time if she is not regularly fed. Lack of attention to these small things is costing many a man the better part of the profit of his dairy.

*Nellie, on April 7, 1892.

**Daisy E. The record cited was February 19, 1894.

